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## OFFICE MEMORANDUM

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**DATE:** January 18, 2001

**TO:** Region Engineers  
Region Associate Delivery Engineers  
Region Construction Engineers  
Resident/Project Engineers/TSC Managers  
Region Traffic Engineers

**FROM:** C. Thomas Maki  
Chief Operations Officer

Gary D. Taylor  
Chief Engineer/Deputy Director  
Bureau of Highway Technical Services

**SUBJECT:** Bureau of Highway Instruction Memorandum 2001-01  
Mandrel Testing Plastic Pipe

Relating to the acceptance of corrugated plastic drainage pipe, Section 401.03c of the 1996 Standard Specification for Construction states:

“At least fifty percent of the installed length of each size of corrugated plastic pipe (CPE), selected by the Engineer, shall be tested for deformation by the Contractor using a nine point mandrel. The mandrel shall have an effective diameter equal to 95 percent of the nominal pipe diameter. The Contractor shall provide the Engineer with a proving-ring to verify mandrel size. The Contractor shall perform the mandrel testing after the required backfill compaction of the trench has been achieved. Conduct the mandrel testing between 5 and 10 working days prior to pavement surfacing or completion of final grade, except as otherwise approved by the Engineer. Pipe with diameter reduced by 5 percent or more shall be removed and either re-installed, if the pipe is not damaged, or replaced at no cost to the Department. Such pipe shall not be re-installed without prior approval from the Engineer. The Contractor will be responsible for all expenses and delays due to the replacement of deformed or damaged pipe. Pipe damaged by the Contractor's operations shall be removed, replaced and mandrel tested at the Contractor's expense.”

Mandrel testing is the mechanism used to validate that proper installation and backfilling techniques were used. Excessive deflections can lead to long term performance problems with the pipe. MDOT has established an allowable installed deflection limit of 5 percent. This reasonably ensures that the long term performance of the pipe will meet our expectations.

This mandrel testing is not optional and should never be waived. The resident engineer must always require the contractor to test plastic pipe per the specification. Please discuss this required testing at every preconstruction meeting when corrugated plastic pipe is to be used on the project.

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Chief Operations Officer

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Chief Engineer/Deputy Director  
Bureau of Highway Technical Services

BOHTS:C/T:PAL:kab

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